

WHAT IS CLAIMED IS:

3.5 A, } 1. A printer to be connected to a host information processor via a given communication medium, the printer comprising:

printer language specifications storage means for storing,  
5 under the control of an operating system operable on said host information processor, printer language specifications which indicates a correspondence between a plot object forming application print data generated at printing by an application operable on the host information processor and a printer language  
10 for printing the plot object on the printer;

printer language specifications setting data generation means for reading said printer language specifications from said printer language specifications storage means to generate printer language specifications setting data predetermined therefor;

15 language specifications setting data transmission processing start means for outputting said printer language specifications setting data generated by said printer language specifications setting data generation means with a predetermined timing; and

20 bi-directional communication means for receiving said printer language specifications setting data for transmission to said host information processor.

2. A printer to be connected to a host information processor via a given communication medium, the printer comprising:

control language specifications storage means for storing,  
5 under the control of an operating system operable on said host information processor, control language specifications which indicates a correspondence between a control element forming application print data generated at printing by an application operable on the host information processor and a control language  
10 for printing the plot object on the printer;

control language specifications setting data generation means for reading said control language specifications from said control language specifications storage means to generate control language specifications setting data predetermined therefor;

15 language specifications setting data transmission processing start means for outputting said control language specifications setting data generated by said control language specifications setting data generation means with a predetermined timing; and

20 bi-directional communication means for receiving said control language specifications setting data for transmission to said host information processor.

3. The printer as claimed in claim 1, further comprising control language generation means for converting said printer

language specifications setting data generated by said printer  
language specifications setting data generation means into  
5 control language data in a predetermined format for output to said  
language specifications setting data transmission processing  
start means, wherein

said language specifications setting data transmission  
processing start means outputs the control language data received  
10 from said control language generation means to said bi-  
directional communication means with a predetermined timing.

4. The printer as claimed in claim 2, further comprising  
control language generation means for converting said control  
language specifications setting data generated by said control  
language specifications setting data generation means into  
5 control language data in a predetermined format for output to said  
language specifications setting data transmission processing  
start means, wherein

said language specifications setting data transmission  
processing start means outputs the control language data received  
10 from said control language generation means to said bi-  
directional communication means with a predetermined timing.

5. The printer as claimed in claim 1, further comprising  
communication data determination means for determining the type  
of communication data received from said host information

processor via said bi-directional communication means, wherein

5       when said communication data is data asking for said printer language specifications setting data, said communication data determination means instructs said printer language specifications setting data generation means to generate said printer language specifications setting data.

6. The printer as claimed in claim 2, further comprising communication data determination means for determining the type of communication data received from said host information processor via said bi-directional communication means, wherein

5       when said communication data is data asking for said control language specifications setting data, said communication data determination means instructs said control language specifications setting data generation means to generate said control language specifications setting data.

7. The printer as claimed in claim 5, further comprising control language interpretation means for further interpreting the predetermined control language data determined by said communication data determination means, wherein

5       when said printer language specifications setting data in the format of said control language data is asked for, said control language interpretation means instructs said printer language specifications setting data generation means to generate said

printer language specifications setting data.

8. The printer as claimed in claim 6, further comprising control language interpretation means for further interpreting the predetermined control language data determined by said communication data determination means, wherein

5 when said control language specifications setting data in the format of said control language data is asked for, said control language interpretation means instructs said control language specifications setting data generation means to generate said control language specifications setting data.

9. The printer as claimed in claim 1, further comprising error detection means for specifying, when an error is observed on the printer, a printer language command caused the error (hereinafter, referred to as error causing command), and

5 control language generation means for generating control language data in a predetermined format according to said error causing command for output to said bi-directional communication means.

10. The printer as claimed in claim 2, further comprising error detection means for specifying, when an error is observed on the printer, a control language command caused the error (hereinafter, referred to as error causing command), and

5 control language generation means for generating control language data in a predetermined format according to said error causing command for output to said bi-directional communication means.

11. The printer as claimed in claim 1, further comprising error detection means for specifying, when an error is observed on the printer, a printer language command caused the error (hereinafter, referred to as error causing command), and

5 language specifications update means for updating, according to said error causing command, said printer language specifications stored in said printer language specifications storage means to prevent said host information processor from using said error causing command.

12. The printer as claimed in claim 2, further comprising error detection means for specifying, when an error is observed on the printer, a control language command caused the error (hereinafter, referred to as error causing command), and

5 language specifications update means for updating, according to said error causing command, said control language specifications stored in said control language specifications storage means to prevent said host information processor from using said error causing command.

13. The printer as claimed in claim 3, further comprising printer settings change means for notifying said control language generation means of the details of setting change made by a user on the printer, wherein

5       said control language generation means generates said control language data indicating said notified details of setting change for output to said language specifications setting data transmission processing start means.

14. The printer as claimed in claim 4, further comprising printer settings change means for notifying said control language generation means of the details of setting change made by a user on the printer, wherein

5       said control language generation means generates said control language data indicating said notified details of setting change for output to said language specifications setting data transmission processing start means.

15. The printer as claimed in claim 11, further comprising printer settings change means for notifying said language specifications update means of the details of setting change made by a user on the printer, wherein

5       said language specifications update means updates said printer language specifications according to said notified details of setting change.

16. The printer as claimed in claim 12, further comprising printer settings change means for notifying said language specifications update means of the details of setting change made by a user on the printer, wherein

5        said language specifications update means updates said printer language specifications according to said notified details of setting change.

17. The printer as claimed in claim 3, further comprising device change detection means for notifying said control language generation means of the details of structural change made by a user on the printer, wherein

5        said control language generation means generates said control language data which indicates said notified details of structural change for output to said language specifications setting data transmission processing start means.

18. The printer as claimed in claim 4, further comprising device change detection means for notifying said control language generation means of the details of structural change made by a user on the printer, wherein

5        said control language generation means generates said control language data which indicates said notified details of structural change for output to said language specifications setting data transmission processing start means.



19. The printer as claimed in claim 11, further comprising device change detection means for notifying said language specifications update means of the details of structural change made by a user on the printer, wherein

5        said language specifications update means updates said printer language specifications according to said notified details of structural change.

20. The printer as claimed in claim 12, further comprising device change detection means for notifying said language specifications update means of the details of structural change made by a user on the printer, wherein

5        said language specifications update means updates said printer language specifications according to said notified details of structural change.

21. A printer driver provided in a host information processor to be connected to a printer via a given communication medium, the printer driver comprising:

5        bi-directional communication means for receiving communication data from said printer;

communication data determination means for determining, under the control of an operating system operable on said host information processor, whether or not the communication data received by said bi-directional communication means is printer

10 language specifications setting data which indicates, a  
correspondence between a plot object forming application print  
data generated at printing by an application operable on the host  
information processor and a printer language for printing the plot  
object on the printer;

15 printer language specifications setting means for  
registering printer language specifications according to said  
printer language specifications setting data determined by said  
communication data determination means;

20 printer settings storage means for storing said printer  
language specifications according to the registration processing  
carried out by said printer language specifications setting  
means; and

printer language generation means for obtaining, according  
to the application print data at printing, said printer language  
25 corresponding to the plot object from said printer settings  
storage means to generate printer language print data for  
transmission to said printer via said bi-directional  
communication means.

22. A printer driver provided in a host information  
processor to be connected to a printer via a given communication  
medium, the printer driver comprising:

bi-directional communication means for receiving  
5 communication data from said printer;

communication data determination means for determining,  
under the control of an operating system operable on said host  
information processor, whether or not the communication data  
received by said bi-directional communication means is control  
10 language specifications setting data which indicates, a  
correspondence between a control element forming application  
print data generated at printing by an application operable on  
the host information processor and a control language for setting  
the control element on the printer;

15 control language specifications setting means for  
registering control language specifications according to said  
control language specifications setting data determined by said  
communication data determination means;

20 printer settings storage means for storing said control  
language specifications according to the registration processing  
carried out by said control language specifications setting  
means; and

25 control language generation means for obtaining, according  
to the application print data at printing, said control language  
corresponding to the control element from said printer settings  
storage means to generate control language print data for  
transmission to said printer via said bi-directional  
communication means.

23. The printer driver as claimed in claim 21, further

comprising control language interpretation means for further interpreting the predetermined control language data determined by said communication data determination means, wherein

5        when said printer language specifications setting data is in a format of said control language data, said control language interpretation means instructs said printer language specifications setting means to register said printer language specifications.

24. The printer driver as claimed in claim 22, further comprising control language interpretation means for further interpreting the predetermined control language data determined by said communication data determination means, wherein

5        when said control language specifications setting data is in a format of said control language data, said control language interpretation means instructs said control language specifications setting means to register said control language specifications.

25. The printer driver as claimed in claim 21, further comprising printer setting data request generation means for generating requesting data asking said printer for transmission of said printer language specifications setting data, and

5        transmitting the same to said bi-directional communication means.

26. The printer driver as claimed in claim 22, further comprising printer setting data request generation means for generating requesting data asking said printer for transmission of said control language specifications setting data, and  
5 transmitting the same to said bi-directional communication means.

27. The printer driver as claimed in claim 21, wherein said printer language specifications stored in said printer settings storage means is provided with, in addition to the correspondence between said plot object and said printer language, link  
5 information indicating whether or not there is an other plot object being equivalent in drawing to said plot object,

printer error information registration means for registering in said printer settings storage means, according to a printer language command causing an error observed on said  
10 printer (hereinafter, referred to as error causing command), printer error information which indicates a plot object using the error causing command causes an error at printing is further provided, and

said printer language generation means refers to said  
15 printer error information and said link information stored in said printer settings storage means, and then replaces the plot object causing the error on said printer with an other plot object linked thereto for generation of said printer language print data.

28. The printer driver as claimed in claim 22, wherein said control language specifications stored in said printer settings storage means is provided with, in addition to the correspondence between said control element and said control language, link  
5 information indicating whether or not there is an other control element being equivalent to said control element,

printer error information registration means for registering in said printer settings storage means, according to a control language command causing an error observed on said  
10 printer (hereinafter, referred to as error causing command), printer error information which indicates a control element using the error causing command causes an error at printing is further provided, and

said control language generation means refers to said  
15 printer error information and said link information stored in said printer settings storage means, and then replaces the control element causing the error on said printer with an other control element linked thereto for generation of said control language print data.

29. The printer driver as claimed in claim 27, wherein, when said printer error information is provided from said printer, said communication data determination means further determines the printer error information received via said bi-directional  
5 communication means for output to said printer error information

registration means.

30. The printer driver as claimed in claim 28, wherein, when said printer error information is provided from said printer, said communication data determination means further determines the printer error information received via said bi-directional communication means for output to said printer error information registration means.

31. The printer driver as claimed in claim 29, wherein, when said printer error information provided from said printer is in the format of the control language data, said control language interpretation means further interprets the control language data to extract said printer error information therefrom for output to said printer error information registration means.

32. The printer driver as claimed in claim 30, wherein, when said printer error information provided from said printer is in the format of the control language data, said control language interpretation means further interprets the control language data to extract said printer error information therefrom for output to said printer error information registration means.

33. The printer driver as claimed in claim 21, further comprising, when information in said printer settings storage

means is set or updated, data for printer settings display generation means for reading the information to generate display data corresponding thereto, and

printer settings display means for performing information display by means of an arbitrary display medium according to said display data generated by said data for printer settings display generation means.

34. The printer driver as claimed in claim 22, further comprising, when information in said printer settings storage means is set or updated, data for printer settings display generation means for reading the information to generate display data corresponding thereto, and

printer settings display means for performing information display by means of an arbitrary display medium according to said display data generated by said data for printer settings display generation means.

35. A recording medium on which a printer driver program to be run on a computer device is recorded for realizing an operational environment on the computer device, the program comprising the steps of:

receiving communication data from a printer;  
determining, under the control of an operating system operable on a host information processor, whether or not said



communication data is printer language specifications setting data which indicates a correspondence between a plot object forming application print data generated at printing by an application operable on the host information processor and a printer language for printing the plot object on the printer; registering printer language specifications according to said determined printer language specifications setting data; and generating, with the application print data at printing, printer language print data for transmission to said printer according to said printer language corresponding to said registered plot object.

36. A recording medium on which a printer driver program to be run on a computer device is recorded for realizing an operational environment on the computer device, the program comprising the steps of:

receiving communication data from a printer; determining, under the control of an operating system operable on a host information processor, whether or not said communication data is control language specifications setting data which indicates a correspondence between a control element forming application print data generated at printing by an application operable on the host information processor and a control language for setting the control element on the printer; registering control language specifications according to

15        said determined control language specifications setting data; and  
generating, with the application print data at printing,  
control language print data for transmission to said printer  
according to the correspondence between said registered control  
element and said control language.

37. The recording medium as claimed in claim 35, further  
comprising the step of further interpreting the predetermined  
control language data determined in said determination step,  
wherein

5        when said printer language specifications setting data is  
in a format of said control language data, said printer language  
specifications is registered in said interpretation step.

38. The recording medium as claimed in claim 36, further  
comprising the step of further interpreting the predetermined  
control language data determined in said determination step,  
wherein

5        when said control language specifications setting data is  
in a format of said control language data, said control language  
specifications is registered in said interpretation step.

39. The recording medium as claimed in claim 35, further  
comprising the step of generating and transmitting requesting  
data asking said printer for transmission of said printer language

specifications setting data.

40. The recording medium as claimed in claim 36, further comprising the step of generating and transmitting requesting data asking said printer for transmission of said control language specifications setting data.

41. The recording medium as claimed in claim 35, wherein said registered printer language specifications is provided, in addition to the correspondence between said plot object and said printer language, with link information which indicates whether  
5 or not there is an other plot object being equivalent in drawing to said plot object,

the step of registering, according to a printer language command causing an error observed on said printer (hereinafter, referred to as error causing command), printer error information  
10 which indicates that a plot object using the error causing command causes an error at printing is further provided, and

in said generation step, said registered printer error information and said link information are referred to, and then the plot object causing the error on said printer is replaced with  
15 an other plot object linked thereto to generate said printer language print data.

42. The recording medium as claimed in claim 36, wherein

said registered control language specifications is provided, in addition to the correspondence between said control element and said control language, with link information which indicates whether or not there is an other control element being equivalent to said control element,

the step of registering, according to a control language command causing an error observed on said printer (hereinafter, referred to as error causing command), printer error information which indicates a control element using the error causing command causes an error at printing is further provided, and

in said generation step, said registered printer error information and said link information are referred to, and then the control element causing the error on said printer is replaced with an other control element linked thereto to generate said control language print data.

43. The recording medium as claimed in claim 41, wherein, when said printer error information is provided from said printer, in said determination step, the printer error information is further determined.

44. The recording medium as claimed in claim 42, wherein, when said printer error information is provided from said printer, in said determination step, the printer error information is further determined.

45. The recording medium as claimed in claim 43, wherein,  
when said printer error information provided from said printer  
is in the format of said control language data, in said  
interpretation step, the control language data is further  
5 interpreted to extract said printer error information therefrom.

46. The recording medium as claimed in claim 44, wherein,  
when said printer error information provided from said printer  
is in the format of said control language data, in said  
interpretation step, the control language data is further  
5 interpreted to extract said printer error information therefrom.

47. The recording medium as claimed in claim 35, further  
comprising the steps of:

generating, when said registered information is set or  
updated, display data corresponding to the information after  
5 reading the same as appropriate, and

performing information display by means of an arbitrary  
display medium according to said display data.

48. The recording medium as claimed in claim 36, further  
comprising the steps of:

generating, when said registered information is set or  
updated, display data corresponding to the information after  
5 reading the same as appropriate, and

